Overview of hypertension treatment

This online CPD accompanies an article published in The Pharmaceutical Journal earlier this month on monitoring hypertension (2 October 2010, pp375–8).

Jon Waterfield, summarises the current recommendations for the treatment of hypertension and explains the rationale behind them.

In 2006, the British Hypertension Society collaborated with the National Institute for Health and Clinical Excellence to produce updated guidance on the treatment of hypertension, based on the appraisal of data from studies published since July 2004. The guidance recommended a major change in that beta-blockers were no longer recommended as routine initial therapy because in head-to-head trials they were less effective than a comparator drugs at reducing major cardiovascular events, particularly stroke. Instead, calcium-channel blockers, thiazide-type diuretics or angiotensin-converting enzyme inhibitors were recommended as first-line treatment. An algorithm for the choice of drugs for the treatment of hypertension, according to the guidance, appears on p2 (Figure 1).

Stepwise treatment

Many patients require more than one drug to achieve adequate blood pressure control. The algorithm is defined by clear steps. Step 1 (first-line treatment) is an ACE inhibitor (or angiotensin 2 receptor blocker [ARB]) for the under 55 age group and either a calcium channel blocker or a thiazide diuretic for those over 55 years or black patients of any age. (In practice, for patients approaching 55 years of age, prescribers may choose either an ACE inhibitor or a calcium channel blocker.)

Step 2 involves the combination of a calcium channel blocker or thiazide diuretic with an ACE inhibitor (or ARB). This was seen as logical because this combination has commonly been used successfully in trials.

Beyond step 2 there is less evidence to guide practice but the guidelines suggest using a three-drug combination of an ACE inhibitor (or ARB), a calcium channel blocker and a thiazide diuretic at step 3. The algorithm suggests step 4 would include the addition of further diuretic therapy or a beta blocker depending on patient suitability. The action to take at step 4 is the subject of current interest and at this stage the prescriber should consider seeking specialist advice. Panel 5 (p2) outlines some of the main issues considered in the literature for its development.

Unless it is necessary to lower the blood pressure urgently, an interval of at least four weeks should be allowed to determine response to a new antihypertensive regimen.

Prescribing issues

The recommendations assume a class effect unless there is clear evidence to the contrary.

Where choice is between calcium channel blockers and thiazide-type diuretic, there is no specific evidence to suggest which is preferable but calcium channel blockers are commonly prescribed in practice. (Thiazide diuretics can cause hyperglycaemia, due to impaired glucose tolerance, which may increase the risk of diabetes.)

Choosing between drugs within a class can be an issue. The data on individual drugs and their capacity to lower blood pressure in a distinct quantitative way, in terms of mmHg, are complex and variable. This is related to the complexity of the physiological processes involved.

The NICE guideline was based on the available evidence but it is unclear whether some drugs are better than others in the prevention of cardiovascular events. On the basis of the mechanism of action of some agents, particularly blockers of the renin-angiotensin system and some of the calcium channel blockers, there is evidence of drug specific benefits beyond the lowering of blood pressure.11

In terms of calcium channel blockers, NICE does not specify which is preferred but recommends a generic that can be taken once daily and that keeps costs to a minimum.

Amlodipine, felodipine, lacidipine, lercanidipine and nifedipine are all available as once daily formulations and licensed to treat hypertension. At the time of writing, amlodipine is the cheapest. Choice depends on the patient’s co-morbidities (eg, amlodipine, felodipine or modified-release nifedipine may be preferred if the patient has angina or diabetes) and other drugs the person is taking.11 One advantage of using a long-acting dihydropyridine is that there is the greater possibility of smoothly reducing blood pressure over a 24-hour period, reducing variation and rebound of blood pressure.

In terms of thiazide diuretics, bendroflumethiazide is cheap and widely used. A prescribing issue that has been topical is the concomitant use of aspirin with antihypertensive drugs. The results of two recent trials support the licensed indication for aspirin in the secondary prevention of vascular risks only.11 The two trials Aspirin for Asymptomatic Atherosclerosis (AAA) and Antithrombotic Triallists Collaboration (ATT) suggest that the risk of gastrointestinal bleeding outweighs the benefits of primary prevention of cardiovascular disease with aspirin. Aspirin is not licensed for the primary...
prevention of vascular events so if it is used for primary prevention there should be a careful assessment of benefits and risk on an individual basis.

**Putting it into practice** My previous article on hypertension presented a scenario for consideration. See Panel 6 for suggestions.

**Pharmacist involvement**

There are several areas where community pharmacists can actively engage in the management of hypertension. For example, some pharmacies in England offer a diabetes filter assessment (NHS Health Check). The enhanced service specification for this programme includes coronary heart disease (heart attacks and angina), stroke, diabetes and kidney disease. All these diseases are linked by a common set of modifiable risk factors: smoking, physical inactivity, high blood pressure, high cholesterol and obesity. The service involves measuring and recording age, sex, smoking status, level of physical activity, family history of vascular disease, ethnicity, body mass index, random blood cholesterol measurement and blood pressure.

This information is applied using a locally agreed risk assessment engine. Where appropriate a diabetes filter assessment is also applied and the level of risk established (high, moderate or low). The level of risk is communicated to the patient and appropriate advice, support and interventions are agreed in partnership with the patient.

Pharmacies not involved in this service can still play a valuable role in this area, for example, by:

- Supporting patients to take their antihypertensive medicines regularly and to answer queries relating to side effects and compliance issues
- Offering a support service for home blood pressure monitoring, in particular providing reassurance and guidance to patients who may be anxious or taking excessive readings
- Signposting patients to useful organisations where they can obtain further information or share views (eg, the Blood Pressure Association)
- Running specific cardiovascular risk prevention services such as smoking cessation or weight management
- Offering blood pressure monitoring
- Offering supplementary or independent prescribing of antihypertensive medication
- Educating patients on areas such as cardiovascular risk assessment and non-pharmacological interventions

**Future developments**

The NICE guidelines published in 2006 are currently being updated and are scheduled for publication in August 2011. A scan of the new

### PANEL 5: BEHIND THE 2006 NICE GUIDANCE

#### First-line treatment

Calcium channel blockers or thiazide diuretics are most likely to benefit most patients as a first-line treatment.

#### Benefits of angiotensin-converting enzyme inhibitors and angiotensin-II receptor blockers

ACE inhibitors and angiotensin-II receptor blockers can be treated as equal in terms of efficacy. ACE inhibitors are the more cost effective option and there is a drive within primary care to encourage their use over ARBs.

#### Treating younger patients

Patients under the age of 55 years were often not included in the clinical trials reviewed. The limited data suggest that initial therapy with an ACE inhibitor (or beta-blocker) may provide a better initial blood pressure lowering compared with a calcium channel blocker or a thiazide-type diuretic. (ACE inhibitors are not recommended in older patients because the activity of the renin-angiotensin system declines with age. However, patients are not routinely switched to calcium channel blockers once they reach 55 years if their blood pressure is stabilised on an ACE inhibitor.) Beta-blockers are considered less effective than ACE inhibitors.

#### Effectiveness of beta-blockers

Beta-blockers are usually less effective than a comparative drug in reducing major cardiovascular events, such as stroke. (However, most studies reviewed used atenolol so it is not certain whether this applies to all beta blockers.) There was also some concern over higher risk of patients developing diabetes, particularly when treated with a combination of a beta-blocker and a thiazide-type diuretic.

#### Ethnic issues

For black patients of any age the first choice of initial therapy should be either a calcium-channel blocker or a thiazide diuretic. It is well established that black patients of African or Caribbean descent have lower renin levels than the general population and do not respond as well to ACE inhibitors. It should be noted that this does not apply to patients of mixed race.

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![Algorithm for treatment of hypertension](image)

**Figure 1: Algorithm for treatment of hypertension, adapted from NICE guidance**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Use a calcium channel blocker or thiazide-type diuretic*</td>
</tr>
<tr>
<td>Step 2</td>
<td>Use ACEI + calcium channel blocker or ACEI + thiazide-type diuretic</td>
</tr>
<tr>
<td>Step 3</td>
<td>Use ACEI + calcium channel blocker + thiazide-type diuretic</td>
</tr>
<tr>
<td>Step 4</td>
<td>Add further diuretic or alphablocker or betablocker and consider seeking specialist advice</td>
</tr>
</tbody>
</table>

* Betablockers are an alternative for patients who cannot tolerate or in whom ACEIs or ARBs are contraindicated

**ACEI** = angiotensin-converting enzyme inhibitor; **ARB** = angiotensin 2 receptor blocker
PANEL 6: SCENARIO — SUGGESTED COMMENTS

Blood pressure reading It is important not overreact to a first high reading and to offer a further reading after a suitable interval. The environment and conditions under which blood pressure readings are taken should be considered. In the scenario the patient has rushed to the pharmacy after a busy day and has had difficulty parking — not ideal conditions for taking a blood pressure reading. Had it not been almost closing time, the patient should have been asked to rest for a while before the reading.

The patient appears anxious and there is a role for the pharmacist to explain about the need to take several readings. There should be clear advice on how to monitor at home and frequency of readings and at what stage he should consult his doctor.

Drug choice The patient is under 55 and not of African or Caribbean descent. He has been prescribed an initial dose of an ACE inhibitor, probably to be titrated every four weeks until a target blood pressure is achieved, according to current guidelines. Choice usually depends on a patient’s co-morbidities, local recommendations and cost — NICE does not specify which ACE inhibitors should be used but recommends one that can be taken once a day, is generic and minimises cost. For people with other conditions, such as diabetes.12 It is important that hypertension is considered as a risk factor rather than a disease. It should be clear to patients that the aim of antihypertensive medication is to reduce cardiovascular risk.

Side effect The pharmacist will need to ask about the nature and severity of the cough (eg, is it dry and irritating?) to determine if this is a side effect that needs referral, if the cough is acute, or whether the patient simply needs reassurance about taking his medicine. An ACE inhibitor induced cough is sometimes associated with hoarseness and huskiness, and is reported to be in the range of 5 to 35 per cent of patients taking this medicine.14 The cough can begin a few hours after taking the first dose or may not become apparent until several weeks after treatment begins. (The suggested mechanism for the side effect is an increase in locally produced prostaglandins or bradikynin, which is a substrate for ACE and also an increased sensitivity of the cough reflex.) It sounds like the patient has only had the cough for a few days so it may not be a side effect of the ACE inhibitor.

In some cases there can be a spontaneous improvement in the cough. Once the drug is stopped, the cough typically resolves within four weeks, but can linger for up to three months.14 There does not appear to be any advantage in switching to another ACE inhibitor so the best option is to trial an ARB. The choice from within the ARB group is based on cost. (Currently only losartan is available as a generic.)

PRACTICE POINTS

Reading is only one way to undertake CPD and the regulator will expect to see various approaches in a pharmacist’s CPD portfolio.

1 Compile a summary list of resources, information and websites that may be useful when supporting and signposting the patient with hypertension.

2 Could you offer blood pressure measurement and cardiovascular risk assessment in your pharmacy? Discuss the pros and cons with your team.

3 Focus medicines use reviews on patients with hypertension.

Consider making this activity one of your nine CPD entries this year.

2 BP test variations “are putting patients at risk”. GP; 9 July, 2010; p16.
8 Pult G. Ambulatory blood pressure monitoring. Available at www.patient.co.uk (accessed on 20 September 2010).
12 Clinical Knowledge Summaries. Hypertension in people who do not have diabetes mellitus — management. Available at www.cks.nhs.uk (accessed on 20 September 2010).
14 Dicpinigaitis P. Angiotensin-converting enzyme inhibitor-induced cough. Chest 2006;129(1 suppl):169S.

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